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| 10/567,906 | 02/10/2006 | Yasushi Noguchi | 127001 | 2391 |
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| OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850 | | | EXAMINER SCHIFFMAN, BENJAMIN A | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/567,906

Applicant(s)

NOGUCHI ET AL.

Examiner

BENJAMIN SCHIFFMAN

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-42 is/are pending in the application.
- 4a) Of the above claim(s) 40-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 24 December 2008, 25 April 2006, 10 February 2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I, claims 31-39, in the reply filed on 28 May 2009 is acknowledged. The traversal is on the ground(s) that there is no serious burden. This is not found persuasive because it does not address the independence or distinctness of the inventions or all sources of burden imposed by the inventions. A serious burden on the examiner may be prima facie shown by appropriate explanation of separate classification, or separate status in the art, or a different field of search. Arguments of convenience or coextensiveness are insufficient showing to demonstrate that there is no undue burden.
2. The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 31-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 31 provides for the use of "aggregate particulate materials", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it

merely recites a use without any active, positive steps delimiting how this use is actually practiced.

6. Claim 32 recites the limitation "the forming blend (wet powder)" in line 3. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 37 provides for the use of "a cordierite forming material", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

8. Claim 38 recites the limitation "while sprayed", however it is unclear what is being sprayed. For the purpose of compact prosecution it is assumed that the water is being sprayed.

9. Claim 39 provides for the use of "a material containing a powder passed through a sieve...", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

10. The remaining claims are rejected due to their dependence on claim 31.

Claim Rejections - 35 USC § 101

11. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

12. Claims 31, 37 and 39 are rejected under 35 U.S.C. 101 because the claimed recitation of a use (see 112 rejections above), without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 31, 33, 34, 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beall et al. (US 6,506,336 B1) in view of Wójcik et al. (*EFFECT OF*

*SELECTED PARAMETERS ON GRINDING PROCESS OF ALUMINA IN THE
ROTARY-VIBRATION MILL).*

16. Regarding claim 31, Beall discloses a method of molding ceramic honeycomb structures (**see abstract and col. 6 l. 53-55**) with the steps of: mixing multiple aggregates (**see col. 3 l. 53 to col. 4 l. 4 and col. 6 l. 8-10**); adding a binder, which includes water, with kneading to form a uniform mixture (**see col. 6 l. 10-11, 25 and 44-48**); forming the clay into a honeycomb structure containing cells separated by walls (**see col. 6 l. 49-55 and col. 7 l. 45-49**); and drying the structure (**see col. 6 l. 56-58**).

17. Beall does not appear to expressly disclose that the mixing step mixes the materials so as to inhibit generation of an agglomerate and set a TG mixture degree to 0.2 or less by use of either an aggregate particulate materials that is classified beforehand or an aggregate particulate material whose surfaces are coated before the start of mixing; and a means for mixing the materials while applying pressurizing vibration to the materials in order to avoid agglomeration of the mixture with the clay.

18. However, Wójcik discloses a method of grinding alumina for production of ceramics (**see abstract**) wherein the aggregate alumina is classified beforehand, i.e. into finer alumina A and coarser alumina B (**see p 116 Material and pp. 122-123 Discussion**) and is ground/mixed by pressurized vibration, i.e. in the rotary vibration mill, to specific sized particles (**see p 117 Characteristics of RVM and pp. 122-123 Discussion**), which necessarily would inhibit the mixing of agglomerates into the clay because it is designed to grind the agglomerates to a specific size before forming the green/sintered molded article.

19. At the time of invention, it would have been *prima facie* obvious to one of ordinary skill in the art to modify the method of Beall to include grinding/mixing of Wójcik, in order to control size of the alumina particles and thus affect green and sintered density as well as shrinkage of the molded article (**see Wójcik pp. 115-116 Introduction**), additionally one of ordinary skill in the art would adjust the mixing order and kneading as discussed in Beall (**see col. 6 l. 24-48**) as well as the filling ratio, media ratio, suspension ratio, frequency and ball diameter as discussed in Wójcik (**see p. 124 CONCLUSIONS**), in order to optimize the uniformity of the mixture, i.e. a consistent amount of binder/water with aggregate within the entire mixture or between multiple samples of the mixture, which is analogous to the coefficient of variation (TG mixture degree) of the mass decrease ratio at a given temperature as measured multiple times with a thermogravimeter, (**see MPEP 2144.05 II**).
20. Regarding claim 33, Beall discloses that the binder/water system includes sodium stearate, which one of ordinary skill would recognize is a surfactant that acts as a dispersant.
21. Regarding claim 34, Wójcik discloses that the pressurized vibration is generated in a rotary vibration mill which contains the forming material and balls, i.e. pebbles, within a container and vibrating the container (**see p 117 Characteristics of RVM**).
22. Regarding claim 37, Beall discloses that the mixture contains alumina (Al_2O_3) or alumina forming particles, specifically aluminum trihydrate ($\text{Al}(\text{OH})_3$), with mean particle diameter of less than 5 microns (**see abstract, col. 7 l. 43-44 and Table I**), which overlaps the claimed range (**see MPEP 2144.05**).

23. Regarding claim 39, Beall discloses that the honeycomb structure has wall thickness of 2-4 mils (50-100 microns) thus one of ordinary skill in the art would recognize that the width of the extruder die would be about 2-4 mils (50-100 microns) **(see col. 7 l. 48-49)**, additionally the average particle diameters of the dry powder mixture is 6.6 microns **(see Table I)**. Therefore one of ordinary skill in the art would recognize that the dry powder could easily pass through a sieve with apertures that are 4/5 or less the width of the extruder die, i.e. 40-80 micron apertures. Additionally Wójcik discloses an alternative technique for sizing the dry powder by passing it through sieves of 400 microns and then 60 microns in order to destroy agglomerates **(see p 118 Sample Preparation)**, which is within the aperture range given by Beall.

24. Claims 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beall et al. (US 6,506,336 B1) in view of Wójcik et al. (*EFFECT OF SELECTED PARAMETERS ON GRINDING PROCESS OF ALUMINA IN THE ROTARY-VIBRATION MILL*) as applied to claim 31 above, further in view of Beall et al. (US 6,300,266 B1).

25. Regarding claim 32, Modified Beall '336 discloses that the binder/water system is mixed with the inorganic powder mixture and this binder/powder mixture was kneaded to form a uniform mixture for forming a ceramic body **(see col. 6 l. 24-48 and col. 7 l. 27-35)**.

26. Modified Beall '336 does not explicitly disclose that the mixing is performed in two stages, i.e. a mixing step forming a wet powder and kneading stage forming the ceramic molding compound.

27. However, Beall '266 discloses a method of forming honeycomb structures from cordierite with substantially the same process as described in Beall '336 (**see title/abstract**), wherein the mixing a kneading process are performed in two stages the first stage the binder/water mixture is added to the dry powder in an amount less than is needed to plasticize the batch then the binder/powder batch (wet powder) is plasticized in a separate stage (**see col. 5 l. 28-52**).

28. At the time of invention, it would have been *prima facie* obvious to one of ordinary skill in the art to modify the mixing of Beall '336 to include the two stages of Beall '266, in order to form a more uniform mixture.

29. Regarding claim 35, Beall '266 discloses that the kneading step includes shearing the with a mixer such as a twin screw extruder/mixer, auger mixer or double arm mixer, all of which one of ordinary skill in the art would recognize include a stirring blade which rotates to stir/shear the forming material (**see col. 5 l. 43-46**).

30. Claims 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beall et al. (US 6,506,336 B1) in view of Wójcik et al. (*EFFECT OF SELECTED PARAMETERS ON GRINDING PROCESS OF ALUMINA IN THE ROTARY-VIBRATION MILL*) as applied to claim 1 above, further in view of Mason et al. (US 4,499,561).

31. Regarding claim 36, modified Beall does not appear to expressly disclose that the mixing and kneading steps are preformed with individual devices and that the devices are connected.

32. However, Mason discloses a method for producing a slurry of plaster, i.e. a ceramic, and water (**see abstract**) wherein the process includes a screw conveyor (21) for agitating the plaster, a hopper (54) in which the water and plaster are initially mixed and an integrally connected to a kneader (59) (**see col. 5 l. 4-60 and fig. 1-2**).

33. At the time of invention, it would have been *prima facie* obvious to one of ordinary skill in the art to modify the mixing/kneading of modified Beall to include the separate and connected mixer and kneader of Mason, in order to increase process speed and efficiency by creating a continuous process that does not require a transfer step between the mixing and operation and the kneading step.

34. Regarding claim 37, modified Beall does not appear to expressly disclose that the water is added by spraying.

35. However, Mason discloses that the water is sprayed (**see col. 5 l. 27-35**).

36. At the time of invention, it would have been *prima facie* obvious to one of ordinary skill in the art to modify the water addition of modified Beall to include the spraying of Mason, in order to provide a more uniform mixture by incorporating the water over a volume of the dry powder rather than in a single concentrated volume.

Conclusion

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN SCHIFFMAN whose telephone number is (571)270-7626. The examiner can normally be reached on Monday through Thursday from 9AM until 4PM.

38. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHRISTINA JOHNSON can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

39. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENJAMIN SCHIFFMAN/
Examiner, Art Unit 1791

/Christina Johnson/

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Supervisory Patent Examiner, Art Unit 1791